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The United States of America



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Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

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Melvinia Gary
Attest



US005978160A

United States Patent [19]

Koiwai et al.

[11] Patent Number: **5,978,160**
 [45] Date of Patent: **Nov. 2, 1999**



[54] **LENS BARREL HAVING A FLARE DIAPHRAGM WHICH CAN ADVANCE INTO AND RETREAT FROM THE OPTICAL PATH TO ELIMINATE DELETERIOUS LIGHT RESULTING FROM MOVEMENT OF THE LENS**

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[21] Appl. No.: **08/979,642**

[22] Filed: **Nov. 26, 1997**

[30] Foreign Application Priority Data

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G02B 9/00

[52] U.S. Cl. 359/822, 359/704; 359/739;
359/740

[58] Field of Search 359/822, 704,
359/739, 740

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[57] ABSTRACT

In a lens barrel, a flare diaphragm is disposed on an optical path of lenses or in the vicinity thereof such that the flare diaphragm can advance into and retreat from the optical path for cutting deleterious light corresponding to the lenses moving in the direction of the optical axis. This lens barrel can reliably cut deleterious light flux in a simple structure.

23 Claims, 15 Drawing Sheets

